

# Executive Summary of Joint Task Force Practice Parameters on Diagnosis and Management of Rhinitis

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Rhinitis is a significant cause of widespread morbidity, medical treatment costs, reduced work productivity and lost school days. Although sometimes mistakenly viewed as a trivial disease, symptoms of allergic and non-allergic rhinitis may significantly impact a patient's quality of life, by causing fatigue, headache, cognitive impairment and other systemic symptoms. In addition, many antihistamines commonly used for treatment can themselves cause performance impairment that may contribute to fatal automobile accidents, work place accidents, decreased work productivity and in children, impaired school performance. Appropriate management of rhinitis may be an important component in effective management of coexisting or complicating respiratory conditions, such as asthma, sinusitis, or chronic otitis media. Rhinitis may be caused by allergic, non-allergic, infectious, hormonal, occupational, and other factors. Defining the causes of rhinitis in an individual is important because different rhinitis syndromes may require different therapeutic approaches for optimal management, an important consideration as more treatment options become available.

This Executive Summary reviews key points about diagnosis and management of rhinitis contained in the comprehensive document, *Diagnosis and Management of Rhinitis: Complete Guidelines of Joint Task Force on Practice Parameters in Allergy, Asthma and Immunology, and Joint Task Force Algorithm and Annotations for Diagnosis and Management of Rhinitis*. These documents represent a consensus opinion of the Joint Task Force on Practice Parameters in Allergy, Asthma and Immunology, a national panel co-sponsored by the American Academy of Allergy, Asthma and Immunology, the American College of Allergy, Asthma and Immunology, and the Joint Council on Allergy, Asthma and Immunology.

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## INTRODUCTION

Rhinitis is defined as inflammation of the membranes lining the nose, and is

characterized by nasal congestion, rhinorrhea, sneezing, itching of the nose and/or postnasal drainage. Rhinitis may be caused by allergic, non-allergic, infectious, hormonal, occupa-

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consult that document for full discussion and references. The AAAAI and the AAAAAI have jointly accepted responsibility for establishing these practice parameters. Because the statements in the parameters summarize the efforts of many participants, no single individual, including those who served on the Joint Task Force, is authorized to provide an official interpretation of practice parameters by the AAAAI or AAAAAI. Any request for information about or an interpretation of these practice parameters by the AAAAI or AAAAAI should be directed to the Executive Offices of the AAAAI, AAAAAI and the Joint Council on Allergy, Asthma and Immunology.

tional, and other factors. All too often, important causes of rhinitis go unrecognized by both physicians and patients. This leads to suboptimal control of the disease. Understanding the differential pathogenesis and defining the causes of rhinitis in an individual is important because different rhinitis syndromes may require different therapeutic approaches for optimal management.

Rhinitis is a significant cause of widespread morbidity, medical treatment costs, reduced work productivity and lost school days. Although sometimes mistakenly viewed as a trivial disease, symptoms of allergic and non-allergic rhinitis may significantly impact the patient's quality of life, by causing fatigue, headache, cognitive impairment and other systemic symptoms. Allergic rhinitis is the most common form of rhinitis, affecting 20 to 40 million people in the United States annually, including 10% to 30% of adults and up to 40% of children. The cost of treating allergic rhinitis and indirect costs related to loss of workplace productivity resulting from the disease are substantial. The estimated cost of allergic rhinitis based on direct and indirect costs is 2.7 billion dollars for the year 1995, exclusive of costs for associated medical problems such as sinusitis and asthma.

## DIFFERENTIAL DIAGNOSIS OF RHINITIS

### Allergic Rhinitis

Allergic rhinitis causes symptoms that result from a complex allergen-driven mucosal inflammation resulting from an interplay between resident and infiltrating inflammatory cells, and a number of inflammatory mediators and

cytokines. Sensory nerve activation, plasma leakage and congestion of venous sinusoids also contribute. Allergic rhinitis may be characterized by early and late phase responses. Each type of response is characterized by sneezing, congestion and rhinorrhea, but congestion predominates in the latter.

Symptoms of allergic rhinitis may occur only during specific seasons, may be perennial without seasonal exacerbation, perennial with seasonal exacerbation, or may occur sporadically after specific exposures. Seasonal allergic rhinitis is caused by an IgE-mediated reaction to seasonal aeroallergens. Typical seasonal aeroallergens are pollens and molds. The length of seasonal exposure to these allergens is dependent on geographical location. Perennial allergic rhinitis is caused by an IgE-mediated reaction to perennial environmental aeroallergens. These may include dust mites, molds, animal allergens, or certain occupational allergens, as well as pollen in areas where pollen is prevalent perennially. The severity of allergic rhinitis ranges from mild to seriously debilitating.

### **Nonallergic Rhinitis**

Nonallergic rhinitis is characterized by sporadic or persistent perennial symptoms of rhinitis that do not result from IgE-mediated immunopathologic events. Examples of nonallergic rhinitis are infectious rhinitis, vasomotor rhinitis, nonallergic rhinitis with eosinophilia syndrome (NARES), hormonal rhinitis, certain types of occupational rhinitis, and gustatory and drug-induced rhinitis.

#### *Infectious Rhinitis*

Infectious rhinitis may be acute or chronic. Acute infectious rhinitis is usually due to one of a large number of viruses, but secondary bacterial infection with sinus involvement is a common complication. Symptoms of chronic infectious rhinosinusitis include mucopurulent nasal discharge, facial pain and pressure, olfactory disturbance, and postnasal drainage with cough.

#### *Nonallergic, Noninfectious Rhinitis Without Eosinophilia*

Nonallergic, noninfectious rhinitis, generally termed vasomotor rhinitis, comprises a heterogeneous group of patients with chronic nasal symptoms that are not immunologic or infectious in origin and usually not associated with nasal eosinophilia. Most of these patients develop rhinitis in response to environmental conditions, such as cold air, high humidity, strong odors and inhaled irritants.

#### *Nonallergic Rhinitis with Eosinophilia Syndrome*

The nonallergic rhinitis with eosinophilia syndrome (NARES) is characterized by nasal eosinophils in patients who have perennial symptoms and occasionally loss of sense of smell. These patients lack evidence of allergic disease as demonstrated by lack of clinically significant positive skin tests and/or specific IgE antibodies in the serum.

### **Occupational Rhinitis**

Occupational rhinitis refers to rhinitis arising in response to airborne substances in the workplace, which may be mediated by allergic (IgE antibody mediated) or nonallergic factors, eg, laboratory animal antigen, grain, wood dusts, and chemicals. It often coexists with occupational asthma.

### **Hormonal Rhinitis**

Causes of hormonal rhinitis include pregnancy and hypothyroidism. Symptoms of rhinitis, particularly nasal congestion, may occur during pregnancy. Symptoms typically are present from the second month to term, but usually disappear rapidly after delivery if there is no history of pre-existing rhinitis. Other causes of rhinitis such as allergic rhinitis, infectious rhinitis and rhinitis medicamentosa (see Drug-induced rhinitis, below) are also common during pregnancy.

### **Drug-Induced Rhinitis**

Drug-induced rhinitis may be caused by a number of medications, including ACE (angiotensin-converting enzyme)

inhibitors, reserpine, guanethidine, phentolamine, methyl dopa, beta blockers, chlorpromazine, aspirin, other non-steroidal anti-inflammatory drugs and oral contraceptives. Rhinitis medicamentosa commonly refers to the over-use of nasally inhaled vasoconstrictor (decongestant) agents such as the OTC (over-the-counter) products, oxymetazoline or phenylephrine. Repeated use of cocaine may also produce rhinitis.

### **Gustatory and Food-Related Rhinitis**

Rhinitis may occur after ingestion of foods or alcoholic products. This may be due to vagally mediated mechanisms, nasal vasodilation, food allergy and/or other undefined mechanisms. Food allergy is a rare cause of rhinitis without associated gastrointestinal, dermatologic or systemic manifestations. The syndrome of copious watery rhinorrhea occurring immediately after ingestion of foods, particularly hot and spicy foods, has been termed "gustatory rhinitis" and is vagally mediated. Intranasal anti-cholinergic agents are of particular value in treatment of gustatory rhinitis.

### **Conditions that May Mimic Symptoms of Rhinitis**

Signs and symptoms suggestive of rhinitis can be produced by other conditions including: nasal septal deviation, tumors, adenoidal hypertrophy, hypertrophy of the nasal turbinates. Nasal polyps may occur in conjunction with chronic rhinitis or sinusitis and may contribute significantly to the patient's symptoms. Nasal polyps should always be considered in the differential diagnosis of patients who present with invariant nasal congestion and its sequelae. Allergy as a cause of nasal polyps has not been established but nasal polyps may occur in conjunction with allergic rhinitis. Nasal polyps in adults may be associated with sensitivity to aspirin and non-steroidal anti-inflammatory drugs, and with asthma ("aspirin triad"). Nasal polyps in children should raise the consideration of cystic fibrosis.

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## EVALUATION OF THE PATIENT

Full evaluation of the patient with rhinitis should include a determination of the pattern, chronicity, and seasonal variation of symptoms (or lack thereof), response to medications, presence of coexisting conditions, occupational exposure, a detailed environmental history and identification of precipitating factors.

Symptoms of rhinitis may significantly impact the patient's quality of life, by causing fatigue, headache, cognitive impairment and other systemic symptoms. An assessment of the degree to which these symptoms interfere with the patient's ability to function should be made.

An examination of the nose should be performed in patients with a history of rhinitis. This should include examination of the nasal passageways, secretions, turbinates, septum, and determination of whether nasal polyps are present. In selected cases, special techniques such as fiberoptic nasal endoscopy and/or rhinomanometry may be useful in evaluating patients presenting with rhinitis symptoms. These tests may require special expertise for appropriate administration and interpretation. Patients with nasal disease require appropriate examination for associated diseases, such as sinusitis and otitis media.

The demonstration of specific IgE antibodies by skin testing or in vitro tests is of particular importance in determining whether the patient has allergic rhinitis and for identifying specific allergens for which avoidance measures and/or allergen immunotherapy are warranted. Skin testing is more cost effective than in vitro testing. Positive results of testing for specific IgE antibody to allergens must be correlated with history to assess their clinical significance.

Nasal cytology may aid in differentiating allergic rhinitis and NARES from other forms of rhinitis, eg, vasomotor, infectious rhinitis, if the correct procedure is followed and the appropriate stains are utilized. However,

there is lack of expert consensus about whether nasal cytology should be routinely used in the diagnosis of rhinitis.

Neither total serum IgE nor total circulating eosinophil counts are routinely indicated in the diagnosis of rhinitis as they are neither sensitive nor specific for allergic rhinitis.

## MANAGEMENT

Avoidance of inciting factors, eg, allergens (house dust mites, molds, pets, pollens, cockroaches), irritants, medications, is fundamental to the management of rhinitis. Triggers should be identified and avoidance measures instituted.

Pharmacologic management should be considered in relation to the etiology and pathophysiology of the condition. If it is possible to anticipate the onset of symptoms, eg, seasonal rhinitis or rhinitis triggered by sporadic exposure, initiating prophylactic medications may lessen the impact of such exposure on the patient.

### Pharmacologic Therapy

*Oral antihistamines* are effective in reducing symptoms of itching, sneezing, and rhinorrhea, and are first line therapy for treatment of allergic rhinitis. However, oral antihistamines have little objective effect on nasal congestion. Antihistamines reduce symptoms of allergic conjunctivitis, which are often associated with allergic rhinitis.

*Sedation and performance impairment from first generation antihistamines: risks to individuals and society.* Sedation and performance impairment are undesirable and potentially dangerous side effects of first generation antihistamines. Studies have demonstrated that many patients may not perceive performance impairment that is associated with these agents. First generation antihistamines have been implicated as causal factors in fatal automobile accidents, confer higher risk for occupational accidents than that associated with narcotics and sedative hypnotics, decrease work performance and productivity, and impair children's learning and academic performance. In the majority of states,

patients taking sedating antihistamines are legally considered "under the influence of drugs." Other central nervous system active substances such as alcohol, sedatives, hypnotics and antidepressants may potentiate the performance impairment from antihistamines. Consequently, second generation antihistamines that are associated with less risk or no risk for these side effects should usually be considered before sedating antihistamines for treatment of allergic rhinitis, and are even mandated in some segments of the transportation industry.

In a strategy intended to reduce costs of antihistamine therapy while avoiding daytime sedation and performance impairment, it has been advocated that one may dose a non-sedating second generation antihistamine (that would otherwise be dosed twice daily) only once daily in the morning, followed by a first generation (and cheaper) antihistamine in the evening. The rationale for this strategy assumes that daytime sedation and performance impairment will be avoided if a first generation antihistamine is administered only at bedtime. However, studies have demonstrated that first generation antihistamines dosed only at bedtime may cause significant daytime sedation, decreased alertness and performance impairment, in part because antihistamines and their metabolites have prolonged plasma half-lives and their end-organ effects persist even longer than plasma levels of the parent antihistamine agent. Consequently, an "AM/PM" dosing regimen combining a second generation agent in the AM with first generation agent in the PM is an ineffective strategy for avoiding daytime sedation and performance impairment from antihistamine treatment.

*Intranasal antihistamines* are effective for treatment of allergic rhinitis. These agents are appropriate for use as first-line treatment for allergic rhinitis, and in contrast to most oral antihistamines, may help reduce nasal congestion. However, patients may perceive them as having a bitter taste and because significant systemic absorption may occur, they may be associated

with resultant sedation in some patients.

*Oral decongestants*, such as pseudoephedrine or phenylpropanolamine, can effectively reduce nasal congestion produced by allergic and non-allergic forms of rhinitis, but they can cause insomnia, loss of appetite or excessive nervousness. In addition, these agents should be used with caution in patients with certain conditions, e.g. arrhythmias, angina pectoris, some patients with hypertension and hyperthyroidism.

*Nasally inhaled corticosteroids* are the most effective medication class for controlling symptoms of allergic rhinitis. They are particularly useful for treatment of more severe allergic rhinitis and may be useful in some forms of non-allergic rhinitis. These agents are generally not associated with significant systemic side effects in adults. Patients should be instructed to direct sprays away from the nasal septum. Although local side effects are minimal if the patient is carefully instructed about the use of this class of drugs, nasal irritation and bleeding may occur. The nasal septum should be periodically examined to assure that there are no mucosal erosions that may precede development of nasal septal perforations that are rarely associated with intranasal corticosteroids. Intranasal corticosteroids should be considered before initiating treatment with systemic corticosteroids for the treatment of rhinitis.

*Oral corticosteroids* administered as a short (3 to 7 day) course or may be appropriate for the treatment of very severe or intractable nasal symptoms or to treat significant nasal polyposis. However, the use of parenteral corticosteroids, particularly if administered recurrently, is discouraged because of greater potential for HPA axis suppression and long-term corticosteroid side effects.

*Intranasal cromolyn sodium* is effective in some patients for controlling symptoms of allergic rhinitis and is associated with minimal side effects. However, QID dosing is often necessary for chronic benefit. Intranasal

cromolyn is most likely to be effective if initiated before symptoms become severe.

*Intranasal anti-cholinergics* may effectively reduce rhinorrhea but have no effect on other nasal symptoms. Side effects are generally minimal, but dryness of the nasal membranes may occur.

*Oral anti-leukotriene agents* may be of value in the treatment of allergic rhinitis, but their role in therapy needs to be defined by further study.

### Other Therapeutic Approaches

*More severe rhinitis* may require multiple therapeutic interventions, including: (1) use of multiple medications, (2) evaluation for possible complications, and for allergic factors, and (3) immunotherapy. A step-wise approach to management is recommended, emphasizing individualization of treatment, based on the spectrum and severity of symptoms, with consideration of cost effectiveness and utilization of both step-up and step-down approaches.

*Allergen immunotherapy* may be highly effective in controlling symptoms of allergic rhinitis. Patients with allergic rhinitis should be considered candidates for immunotherapy based on the severity of their symptoms, failure or unacceptability of other treatment modalities, presence of comorbid conditions, and possibly as a means of preventing worsening of the condition or the development of comorbid conditions (eg, asthma, sinusitis). Selection of the patient's immunotherapy extract should be based on correlation between the presence of specific IgE antibodies (demonstrated by allergy skin testing or in vitro testing) and the patient's history.

Similar to other chronic diseases, such as hypertension, appropriate follow-up of patients with allergic rhinitis on a periodic basis, is recommended. Education of the patient and/or the patient's caregiver in the regard to the management of rhinitis is essential. Such education maximizes compliance and the possibility of optimizing treatment outcomes.

Appropriate management of rhinitis may be an important component in effective management of co-existing or complicating respiratory conditions, such as asthma, sinusitis, or chronic otitis media. Data suggest that failure to reduce inflammation in the upper airway may lead to suboptimal results in asthma treatment.

### Special Considerations in Patient Subsets

Special diagnostic and therapeutic considerations are warranted in selected patient subsets, including in children, the elderly, pregnant women, athletes, and in those with rhinitis medicamentosa.

#### Children

Nasal obstruction from structural defects or adenoidal hypertrophy are often seen in children with rhinitis. Nasal polyps are rare in childhood. Conditions associated with nasal polyps in childhood include cystic fibrosis, ciliary dyskinesia, chronic infections as seen in immunologic deficiency states, and occasionally allergic rhinitis, while aspirin intolerance may be responsible for nasal polyps in adolescents and adults.

Non-allergic, non-infectious rhinitis with eosinophils (NARES) occurs extremely infrequently in childhood and probably accounts for less than 2% of children with nasal eosinophilia.

Nasal symptoms, particularly congestion and rhinorrhea, are common in infants and children with pharyngonasal reflux resulting from prematurity, neuromuscular disease, dysautonomia, velopharyngeal incoordination, or cleft palate. Those affected experience frequent choking, apneic spells, recurrent pneumonia (due to concomitant gastroesophageal reflux and/or tracheal aspiration), and aspiration of formula leading to secondary chemical/infectious rhinitis. Increasing age and thickened feedings improve the pharyngonasal reflux.

Oral antihistamines or nasal cromolyn remain the first-line pharmacologic treatments of childhood allergic rhinitis. As in adults, second genera-

tion antihistamines provide a greater benefit risk ratio than the first generation antihistamines, but not all of these second generation antihistamines have received Food and Drug Administration approval for use in young children.

Topical nasal corticosteroids in children as in adults are the most effective pharmacologic therapy of allergic rhinitis with the capacity to control sneezing, pruritus, rhinorrhea, and congestion but not ocular symptoms. Extensive clinical and toxicologic studies have generally demonstrated that nasal corticosteroids have an excellent benefit/risk profile in long-term usage in children. In 1998, the Food and Drug Administration reviewed data that some nasal corticosteroids may have a temporary adverse effect on growth in children, but it is uncertain whether there may be a long term effect on ultimate attained height. It is also unclear whether all nasal corticosteroids may have such an effect. Because of this concern, nasal corticosteroids should be used in children at the lowest possible effective dose the FDA recommends that height be monitored routinely and other therapeutic approaches (environmental control, non-steroid pharmacologic agents, and if appropriate, allergen immunotherapy) should be used in conjunction with nasal corticosteroids so that nasal corticosteroid doses may be minimized.

#### *Elderly Patients with Rhinitis*

Allergic rhinitis is an uncommon cause of perennial rhinitis in individuals over 65 years of age. More commonly, rhinitis in the elderly is due to cholinergic hyperreactivity (associated with profuse watery rhinorrhea which may be aggravated after eating, "gustatory rhinitis"), alpha adrenergic hyperactivity (congestion associated with antihypertensive drug therapy) or sinusitis. The watery rhinorrhea syndrome frequently responds to intranasal ipratropium. Discontinuation of antihypertensive medication responsible for nasal congestion should be considered but may not always be feasible. The anticholinergic effects of first generation antihistamines may cause bladder distur-

bances or problems with visual accommodation, and sedation may also be bothersome. Second generation antihistamines (e.g. fexofenadine, loratadine), which do not cause significant anticholinergic effects, sedation, performance impairment or adverse cardiac effects are better choices than sedating antihistamines for treatment of the elderly. Elderly patients may also be more likely to be treated with beta blockers, a relative contraindication for allergen immunotherapy.

#### *Rhinitis in Pregnancy*

The most common causes of nasal symptoms during pregnancy are allergic rhinitis, sinusitis, rhinitis medicamentosa, and vasomotor rhinitis. Preexisting allergic rhinitis may worsen, improve or stay the same during pregnancy.

Chlorpheniramine and triphenylamine have been the preferred antihistamines for use during pregnancy. Although pseudoephedrine is the preferred decongestant during pregnancy, case control studies have linked first trimester use of oral decongestants with infant gastroschisis (a defect in the abdominal wall). Therefore, oral decongestants should probably be avoided during the first trimester, if possible. For allergic rhinitis, nasal cromolyn is useful and may be considered first in view of its topical application and reassuring gestational human and animal data. Intranasal beclomethasone may be used if nasal cromolyn does not provide adequate control of daily symptoms, or as an alternative to oral therapy, although there is no published experience on the use of intranasal beclomethasone during pregnancy. Intranasal beclomethasone may also be used to allow discontinuation of topical decongestants in patients with rhinitis medicamentosa. If nasal beclomethasone is used, it should be tapered to the lowest effective dose. Vasomotor rhinitis usually is adequately controlled by intranasal saline instillation, exercise appropriate for pregnancy, and pseudoephedrine. Appropriate antibiotics for use during pregnancy for the treatment of sinusitis include amoxicillin with or without

clavulanate, erythromycin, and cephalosporins.

Immunotherapy for allergic rhinitis may be continued during pregnancy, if it is providing benefit without causing systemic reactions. Doses should not be increased and should be adjusted in order to minimize the chance of inducing a systemic reaction, which could be harmful to both mother and fetus. Benefit/risk considerations do not generally favor starting immunotherapy during pregnancy.

#### *Rhinitis in Athletes*

Prescription of medication for the competitive athlete should be based on two important principles: (1) no medication given to the athlete should be on any list of doping products and should be approved for use by the U.S. Olympic Committee (USOC) and International Olympic Committee and (2) no medication should adversely affect the athlete's performance. The USOC generally observes the International Olympic Committee list of banned and allowed drugs. Athletes and their physicians should be aware that all oral decongestants are banned, and oral antihistamines are allowed by the USOC but may be banned by the international federation of certain sports. The use of oral or parenteral corticosteroids is banned. If topical nasal corticosteroids are administered to olympic class athletes, physicians must send written notification of the indication for use to the USOC.

#### *Rhinitis Medicamentosa*

Rhinitis medicamentosa is a syndrome of rebound nasal congestion which follows the overuse of intranasal alpha-adrenergic decongestants or cocaine and occasionally even systemic decongestants. Examination of the nose usually reveals a congested and reddened mucous membrane, but a pale, edematous mucosa may occasionally be observed. The mucosa in patients with rhinitis medicamentosa is characteristically unresponsive to further application of decongestants. Consequently, intranasal corticosteroids should be used and patients should be advised to discontinue

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the topical decongestants as soon as clinical symptoms abate. Occasionally, a short course of oral corticosteroids (eg, prednisone 30 mg daily for 5 to 7 days) may be necessary in adults to allow for discontinuation of the topical decongestants. Underlying chronic rhinitis in patients with superimposed rhinitis medicamentosa must be appropriately evaluated and treated.

#### **Consultation with an Allergist-Immunologist**

There are a variety of circumstances in which the special expertise and training of an allergist-immunologist may offer benefits to a patient with rhinitis. Reasons for consultation with an allergist/immunologist include, but are not limited to the following:

1. Clarification and identification of allergic or other triggers for the patient's rhinitis condition.
2. When management of rhinitis is unsatisfactory due to inadequate efficacy or adverse reactions from treatment.
3. When education in allergen avoidance techniques is needed.
4. When allergy immunotherapy may be a consideration.
5. When there is impairment of patient's performance because of rhinitis symptom manifestations or medication side effects, eg, patients involved in the transportation industry, athletes, students, etc.
6. When the patient's quality of life is significantly affected (eg, patient comfort and well-being, sleep disturbance, smell, taste).
7. When complications of rhinitis develop, eg, sinusitis, otitis media, orofacial deformities.
8. In the presence of comorbid conditions such as recurrent or chronic sinusitis, asthma or lower airway disease, otitis media, nasal polyps.
9. When patients require systemic corticosteroids to control their symptoms.
10. When the duration of rhinitis symptoms is greater than three months.
11. When there is a significant cost from use of multiple medications.

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